

# Vermont Forest Health

## Insect and Disease Observations – April 2022

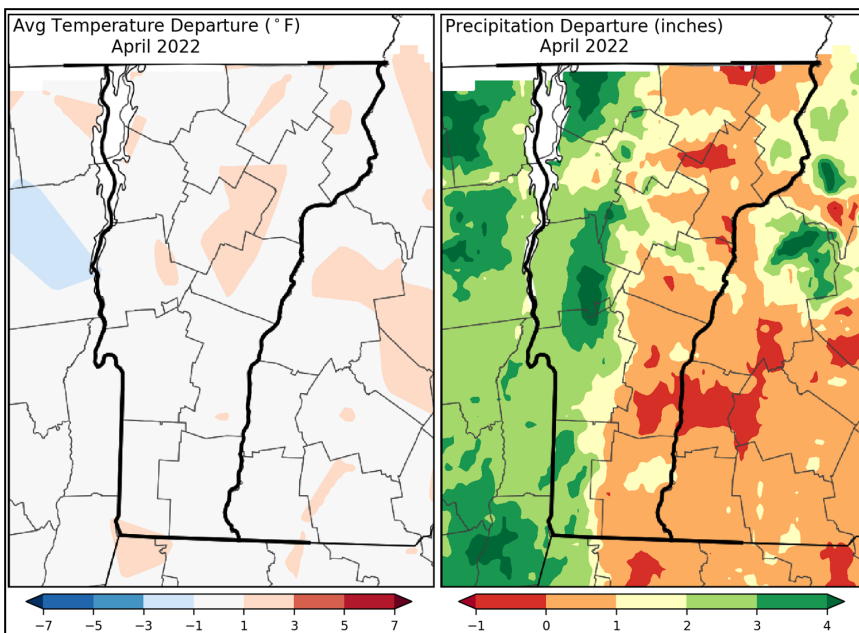
Department of Forests, Parks & Recreation  
April 2022

[vtforest.com](http://vtforest.com)

### April Weather

Vermonters faced a colder and wetter April compared to 2021. State-wide temperatures averaged 41.1°F, which was 1.7 degrees colder than April of last year. Average precipitation across the state was 4.97 inches, which was 0.91 inches more than last year's average.

While spring rainfall has helped reduce drought severity in most parts of the state, northern Vermont continues to receive little rainfall. Starting April 5th, the [U.S. Drought Monitor](#) listed 36.09% of the state as abnormally dry, and by the end of April, this number decreased to 12.58%, with no other drought classifications listed.



Average temperature and precipitation departure from normal. Maps and data: [Northeast Regional Climate Center](#).

### Sugar Season Recap

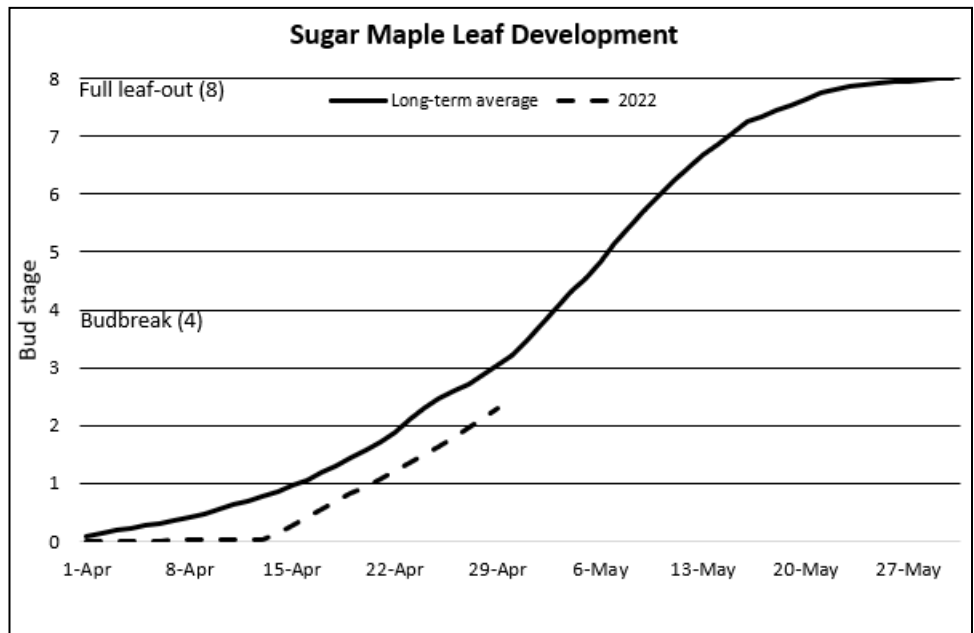
Vermont's sugaring season has come to a close in most areas of the state. An alternating pattern of freezing night temperatures and warm days of 40-45 degrees are needed for sap flow. Although 2022 was a short season, many producers reported that they had an excellent year and many producers had exceeded their expected volume, as cool April temperatures helped compensate for a warmer March. For more information visit the [Vermont Maple Bulletin](#) and check out this [video](#) on the maple sugaring process in Vermont.



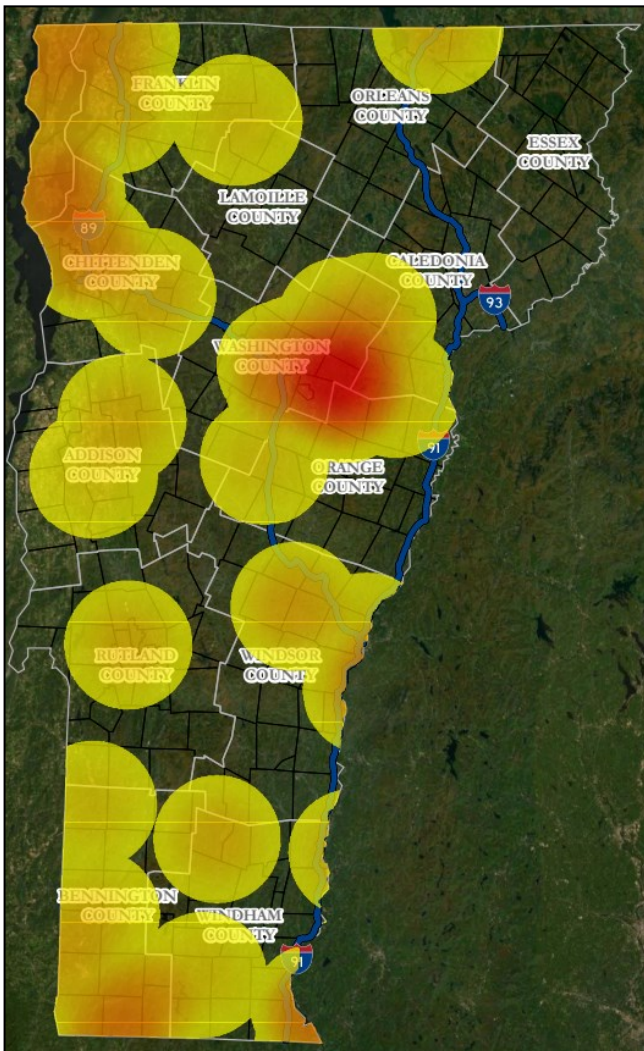
Dillner family sugar bush. Photo credit: FPR Staff.

## Spring Budbreak and Leaf Out

Sugar maple trees at our long-term phenology monitoring site at Proctor Maple Research Center (Underhill, VT) have yet to break bud. This contrasts with last year's very early budbreak, which took place on April 12, 2021. By the end of April 2022, sugar maple buds were delayed in development compared to the long-term average for budbreak at the site. Some flower buds were observed in upper canopies, but it does not appear to be a heavy sugar maple flowering/seed year.



## EAB Update



FPR utilizes trap trees on state land to detect emerald ash borer (EAB, *Agilus planipennis*) infestations during the winter months. Trap trees are low value ash trees that are girdled to induce tree stress. After being girdled in the spring, stressed ash produce chemicals that attract pests including EAB. During the winter, the trees are felled and peeled to look for EAB larvae and galleries. In the winter of 2022, this monitoring effort resulted in four positive finds in Swanton, Cabot and Bennington. EAB is now found in all counties excluding Essex, and populations and spread are predicted to increase.

If you are a forest landowner, homeowner, forester, logging contractor, municipality, and/or utility professional in an infested area, you should evaluate the options available to protect ash trees and immediately implement Vermont's "[Slow the Spread](#)" recommendations. For additional resources including managing ash in your woodlot or around your home, or Use Value Appraisal guidance, check out the resources available at [VTInvasives](#).

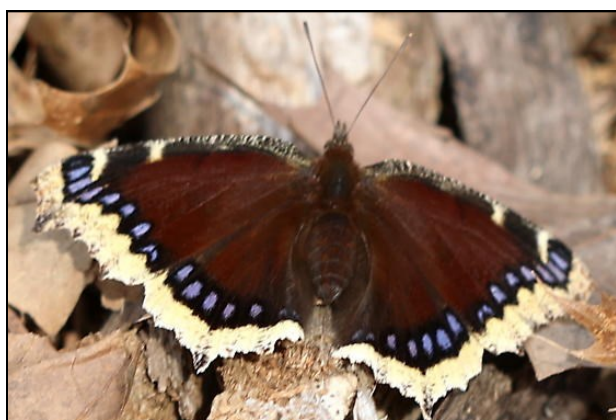
EAB Infested Area in Vermont. Map and data: [ANR's Natural Resources Atlas](#).



## Supplemental Sightings

Eastern spruce gall adelgid (*Adelges abietis*) was observed on red spruce in central Vermont this month. Feeding nymphs cause galls to form on the base of young shoots during the summer months. These galls can stay attached to the tree through the growing season and into the winter. These galls provide shelter for the growing nymphs and cause infested branches to be browned, stunted, and deformed. Although aesthetically alarming, this pest does not usually cause large-scale dieback or tree mortality.

Eastern spruce gall adelgid. Photo credit: Stanislaw Kinelski, [Bugwood](#).



Mourning cloaks (*Nymphalis antiopa*) were observed in northern Vermont at the end of this month. During winter, these butterflies either migrate south to warmer temperatures or overwinter as adults using cryopreservation (freezing for extended periods of time). As adults, these butterflies prefer to feed on tree sap, especially from oaks, but will also feed on rotting fruit.

Mourning cloak. Photo credit: John Ross, [BugGuide](#).

Common puffballs (*Lycoperdon perlatum*) have been observed in central Vermont after periods of heavy rainfall. This mushroom is saprotrophic and can be found in both hardwood and softwood stands. When mature, a central perforation is made where spores are expelled when disturbed, commonly by rainfall. Check out this [spore dispersal video](#).

Immature common puffballs. Photo credit: Melissa Kuo, [Mushroomexpert](#).



Branch flagging. Photo credit: John W. Schwandt, USDA Forest Service, [Bugwood](#).

White pine blister rust (*Cronartium ribicola*) was observed causing branch dieback in eastern white pine in southern Vermont. This rust pathogen requires both eastern white pine and currants or gooseberries (*Ribes* spp., also *Castilleja* spp. and *Pedicularis* spp.) to complete its lifecycle. On pine (primary host), this pathogen causes needle discoloration and cankers. Depending on the location of the canker (branch vs bole) this can lead to branch dieback (flagging) and or tree mortality. In currants or gooseberries (alternate host) this pathogen causes leaf chlorosis in infected leaves.



Fir-broom rust (*Melampsorella caryophyllacearum*) was observed on balsam fir in the northeast kingdom this month. This fungus alternates between fir trees and chickweeds (*Cerastium* spp., *Stellaria* spp.) On fir trees (the primary host), it causes a yellow witches' brooms, and on chickweeds (the alternate host) it causes yellowing of infected leaves. Although this pathogen is rarely associated with the mortality of fir trees, witches' brooms can lead to dieback and a reduction in overall tree health and vigor.



Witches' broom. Photo credit: Mike Schomaker Jacobi, Colorado State University, [Bugwood](#).



Redheaded ash borer (*Neoclytus acuminatus*) continues to be observed in emerald ash borer reports. These beetles breed in newly planted living trees as well as dead and dying hardwood trees. Although commonly reported in ash, these beetles also prefer hackberry, hickory, and oak trees. As larvae, this insect makes both horizontal and vertical tunnels which can contribute to dieback in infested trees.

Redheaded ash borer adult exit holes on green ash. Photo credit: James Solomon, USDA Forest Service, [Bugwood](#).

Lirula needlecast (*Lirula nervata*, *L. mirabilis*) was reported on urban balsam fir trees in northern Vermont. This fungal pathogen causes needle necrosis and premature needle drop in infected hosts. Symptoms range from scattered brown needles to the loss of 3-4-year-old needles. Symptoms typically become apparent the spring following the year of infection. Prolonged infections can lead to bud and branch dieback and mortality.



Lirula needlecast symptoms. Photo credit: Scott Tunnock, USDA Forest Service, [Bugwood](#).



Pileated woodpecker (*Dryocopus pileatus*) damage continues to be reported on dead and dying trees throughout the state. These birds excavate large cavities in search of wood-boring larvae within the tree. These excavated cavities are often so large that they attract other woodpeckers to come and feed there. Although the damage to the tree is often alarming, pileated woodpeckers are a contributing factor for tree mortality, not the causal agent.

Pileated woodpecker damage. Photo credit: Steven Katovich, [Bugwood](#).



Pseudoscorpion (Pseudoscorpionida) is an arachnid that continues to be reported in homes throughout the state. Although its appearance can be frightening, this arachnid is beneficial to humans since they prey on carpet beetle larvae, booklice, and clothes moth larvae when indoors. This arachnid is not harmful to humans. When outside, they are found in small spaces such as cracks and crevices under leaf litter, moss, bark, and nests and feed on springtails, bark lice, thrips, ants, mites, and small beetle larvae.



Pseudoscorpion. Photo credit: Tom Murray, [BugGuide](#).



Early signs of white pine needle damage (WPND; *Bifusella linearis*, *Lecanosticta acicola*, *Lophophacidium dooksii*, and *Septorioides strobii*) was observed on white pine in the northeast kingdom this month. This combination of foliar pathogens causes chlorosis and necrosis of 1-year-old needles. Although this is an increasingly damaging complex, individually these pathogens are not documented as causal agents of large-scale defoliation.

Needle blight from WPND. Photo credit: FPR Staff.

Orange belted bumblebee (*Bombus ternarius*) was spotted in the Northeast Kingdom at the end of April. Queens hibernate in loose soil and leaves and emerge in late April to search for a nesting site. These bees prefer to nest in small and shallow cavities in the ground, near an abundance of flowers. Unlike honey bees, this bee's stinger lacks barbs so it can sting repeatedly without risk of dying.



Orange belted bumble bee. Photo credit: LaureinMaine, [BugGuide](#).



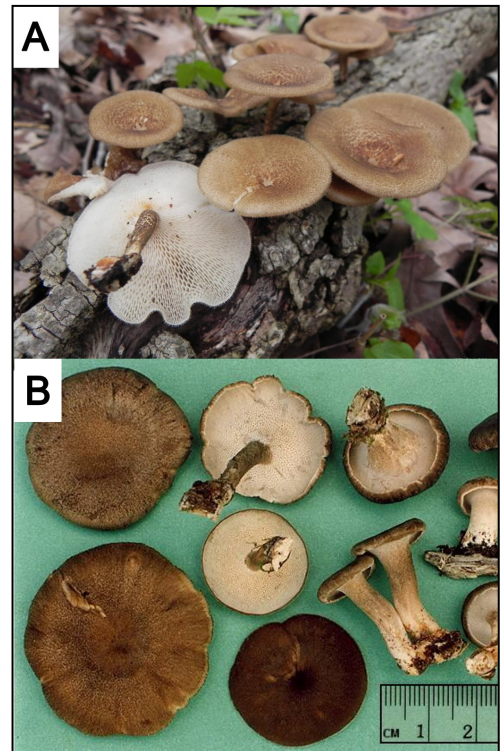
Ramps (*Allium tricoccum*) have emerged in most areas of the state. This plant emerges from a bulb, with only one to two leaves that emerge separately. Ramps grow in moist and shaded conditions, and their leaves and bulbs smell like onions when crushed. Ramps have a 5-7 year growth cycle, so only harvesting one leaf/bulb per plant is recommended.

Ramps. Photo credit: Southern Research Station, USDA Forest Service, [Bugwood](#).



## Foraging For Fungi

Spring polypore (*Polyporus arcularius*) is foraged for its anti-microbial properties, and although edible, is usually too tough to consume. This fungus is saprotrophic and is a white rot that is found growing out of decaying hardwoods, especially oaks. The cap of this fruiting body is tan in color with golden-brown concentric scales, has a convex to flat or shallowly depressed cap, and is 1-6cm wide. Its pore surface is decurrent, white-brown in color with angular pores that are 0.5-1mm wide. It has a creamy white spore print. Its stem is brown to yellow-brown in color and is scaly to hairy in texture. The stem measures 2-5cm long and 2-4mm wide and is either central or slightly off-center. This mushroom has an inedible look-a-like, the winter polypore (*Polyporus brumalis*). This fungus is also saprotrophic and can be found on hardwoods, especially birches. The cap of this fungus is dark yellow to dark brown with fine hairs, has a broadly convex or shallowly depressed shape, and is 2-8cm wide. Its pore surface is decurrent, white in color with round pores 2-3mm wide. It has a white spore print. Its stem is whiteish grey to pale brown in color and is bald or finely hairy and 2-3cm long and 2-5mm wide and is either central or slightly off-center.



**A:** Spring polypore. Photo credit: Michael Kuo, [MushroomExpert](#). **B:** Winter polypore. Photo Credit: Richard Nadon, [MushroomExpert](#).



**A:** False morel. **B:** True morel. Photo credit: Davide Cassi, University of Parma.

True Morels (*Morchella esculenta*), are a highly sought-after edible that has been reported in the last week of April. This fungus can be both mycorrhizal and saprotrophic and is found in mixed hardwood stands. Its cap is yellow-brown in color and has a globular or elongated vertical oval shape that is covered in pits and ridges. The cap is 5-12cm tall and 3-8cm wide and is attached directly to the stem. It has a creamy white spore print. The stem is whiteish in color and is 3-12cm long and 1.5-6cm wide. When the fruiting body is sliced in half, it is completely hollow.

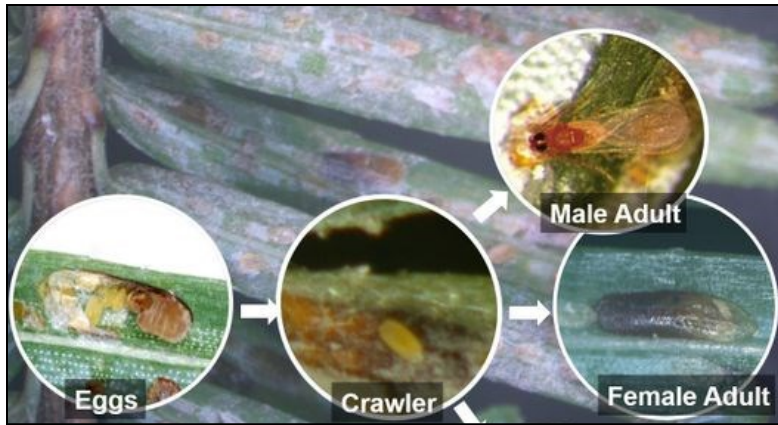
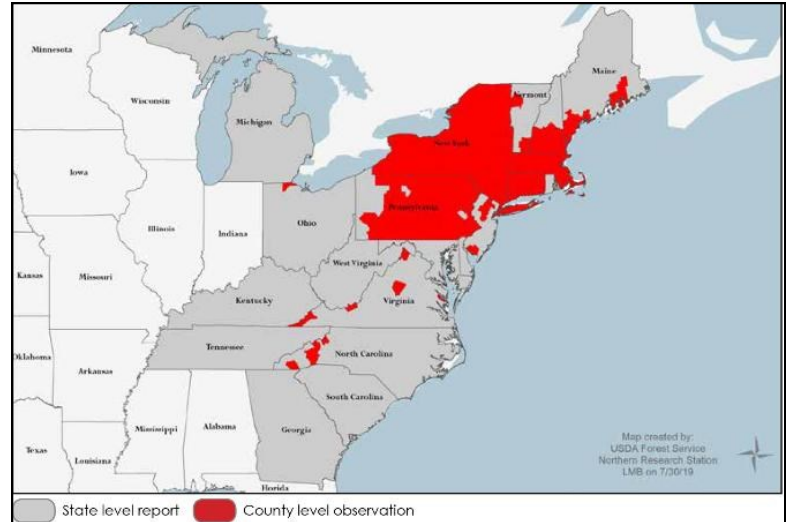
This mushroom has several look-alikes, including the false morel (*Gyromitra esculenta*). This species, although consumed in some cultures, can

be fatal due to the carcinogenic mycotoxin, gyromitrin. This mushroom is also both mycorrhizal and saprotrophic and is found in softwood stands. Its cap is tan to reddish-brown in color, brain-shaped, and measures 4-8cm tall and 3-12cm wide. It has a yellow spore print. Its stem is pale yellow to tan and is 3-9cm long and 1-3.5cm wide. When sliced in half this mushroom has a cauliflower-like internal structure. As with all wild mushrooms, there are risks to eating and misidentifying them which can be both dangerous and fatal. Always ensure you have the correct identification before consuming any wild edible. **The State of Vermont accepts no liability or responsibility for the consumption and/or misidentification of any mushrooms mentioned in this publication.**

## Pests in the Spotlight: Elongate Hemlock Scale

Elongate hemlock scale (EHS, *Fiorinia externa*) is an invasive armored scale that uses its piercing-sucking mouthpart to feed on photosynthates inside conifer needles. This insect was first observed in New York state in 1908 and has since spread to 20 states, including Vermont, where it was first observed in forested stands in 2014.

Distribution map of EHS in the United States. Photo credit: USDA Forest Service, Northern Research Station.



Life stages of EHS. Photo credits: Egg photo, PA DCNR; adult male photo, PA Department of Agriculture; and crawler photo, Eric. R. Day, Virginia Polytechnic Institute and State University.

In Vermont, the elongate hemlock scale is most commonly observed infesting eastern hemlock, although it can also be observed on other hemlocks, fir, true cedars, spruce, Douglas fir, junipers, pine, and yews. Elongate hemlock scale has two overlapping generations per year, with egg, nymph, and adult stages. The early instar nymph (aka crawler stage) is the only stage that can infect new hosts. These crawlers move passively by wind and animals but can move larger distances by humans moving infested plant material. Adult females are immobile, and adult males are weak fliers.

Elongate hemlock scale feeding can lead to yellowing of needles (chlorosis), premature needle loss, and dieback. Symptomatic branches are usually observed in the interior of the lower branches, but progress upwards as scale populations increase. In severely infested trees, dieback can lead to tree mortality. Elongate hemlock scale and hemlock woolly adelgid often coexist on the same tree, sucking sap and rapidly depleting resources. For more information or to report a sighting, visit [VTInvasives.org](http://VTInvasives.org).



EHS infested branch. Photo credit: Eric R. Day Virginia Polytechnic Institute and State University, [Bugwood.org](http://Bugwood.org).

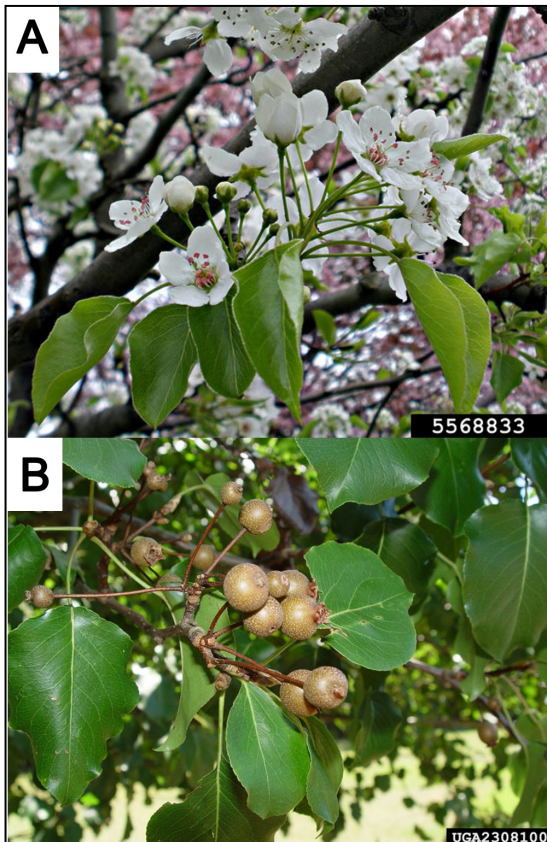


## Early Detection—Invasive Pear Trees

Invasive Callery pear (*Pyrus calleryana* and all its cultivated varieties) has been in the news lately; states across the region have been listing this species as a noxious weed – a distinction that carries with it limitations and regulations on the sale and movement of these plants. Not to be confused with common pear (*Pyrus communis*), which is the source of the pears you'll find at the farmstand or grocery store, Callery or Bradford pears have small fruits (lacking a calyx) often hidden by foliage, and large thorns. Callery pear evolved in eastern Asia and has been introduced to North America several times since the early 20th century, and it gained popularity in the 1950s as an ornamental and street tree. This plant has been known to escape from cultivation across most of the United States, particularly in the South, Midwest, and southern New England.



*Pyrus calleryana* tree. Photo credit: Richard Gardner, [Bugwood](#).



**A:** Flowers of Callery pear. Photo credit Ansel Oommen, [Bugwood](#).

**B:** Fruit of Callery pear. Photo credit: Chuck Barger, University of Georgia, [Bugwood](#).

Callery pear is moderately sized (~40') deciduous tree, with alternately arranged, oval, dark green leaves, that are finely toothed. The cultivated varieties display variations on foliage color, presence or absence of the thorns, but all will have unpleasantly scented white flowers that appear in early spring prior to the emergence of their leaves. Once claimed to be sterile, cultivated varieties, like the Bradford pear, can produce viable seeds with pollen from any other *Pyrus* plants, producing fertile progeny. The fruit produced by parent and offspring plants is eaten by wildlife and spread beyond the landscape environment and into natural areas, where it can establish a monoculture, outcompeting and excluding locally evolved species.

As shared earlier, some states have recognized the invasiveness of this species and its cultivated varieties and are enacting bans. Pennsylvania has a ban that took effect in February of this year (2022), Ohio's ban will take effect in 2023, and South Carolina's ban will take effect in 2024. Though currently not widely present in northern New England, a [predicted warmer climate in the Northeast](#) means that more areas are compatible for the growth and spread of the pears, which are restricted by a cold intolerance (zones 4-9). While not officially listed in Vermont, this plant is considered an early detection invasive species. There are no confirmed locations of this plant escaped from cultivation, so if found, please report them using the [Report It! Tool](#) on the VTinvasives.org website.



While Callery pear is only formally banned in one state right now, many places are embarking on removing specimens from public lands, like Indiana’s MC-IRIS initiative that’s proactively supporting community events focused on removal of Callery pear trees, and the city of Providence, RI just announced their plans to stop planting Callery pear. And some states are offering tree replacements or buy backs, encouraging landowners to replace Callery pears with locally evolved trees. [Great alternatives](#) to Callery pear include chokecherry (*Prunus virginiana*), American plum (*Prunus americana*), eastern hophornbeam (*Ostrya virginiana*), American hornbeam (*Carpinus caroliniana*), serviceberry/shadbush (*Amelanchier arborea*), and flowering dogwood (*Benthamidia florida* syn. *Cornus florida*). For more information about selecting a tree to plant in Vermont, check out the [Second Edition Vermont Tree Selection Guide 2022](#), produced by the Vermont Urban & Community Forestry Program.



*Pyrus calleryana* leaves. Photo credit: Chuck Barger, University of Georgia, [Bugwood](#).

To learn more about Callery pear, check out [VTinvasives.org](#) and these additional resources:

- [Finger Lakes PRISM](#)
- [Woody Invasives of the Great Lakes Collaborative](#)
- [PennState Extension– Callery Pear Background](#)

### Invasive Plant Phenology

In the second full week of every month, volunteers around the state record and report invasive plant phenology. Their observations are compiled here, creating both a timely resource for best management options and a historic record of plant behavior. If you would like to be involved in this effort, please contact [pauline.swislocki@vermont.gov](mailto:pauline.swislocki@vermont.gov). As you can see below, observers are still needed in multiple counties.

**Addison County** – [Initial growth](#): knotweed spp.

**Caledonia County** – [Breaking leaf bud](#): shrub honeysuckle

**Chittenden County** – [Initial growth](#): garlic mustard, knotweed spp.; [Breaking leaf bud](#): Asiatic bittersweet, burning bush, common buckthorn, multiflora rose, shrub honeysuckle, spindle tree; [Leaves](#): Asiatic bittersweet, European stinging nettle, garlic mustard, greater celandine, goutweed, Japanese barberry, shrub honeysuckle, vinca minor, wild parsnip; [Increasing leaf size](#): Asiatic bittersweet, Japanese barberry, shrub honeysuckle

**Orange County** – [Breaking leaf bud](#): shrub honeysuckle

For more information about the phenology of invasive plants in Vermont, check out [Bud Buds](#), a podcast from the Invasive Plant Program.

	<b>For more information, contact the Forest Biology Laboratory at 802-505-8259 or:</b>	Windsor & Windham Counties..... Bennington & Rutland Counties..... Addison, Chittenden, Franklin & Grand Isle Counties..... Lamoille, Orange & Washington Counties..... Caledonia, Orleans & Essex Counties.....	Springfield (802) 289-0613 Rutland (802) 786-0060 Essex Junction (802) 879-6565 Barre (802) 476-0170 St. Johnsbury (802) 751-0110
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